

Application No. 10/038,120  
Amendment "B" dated August 16, 2004  
Reply to Office Action mailed June 16, 2004

### REMARKS/ARGUMENTS

Applicants wish to thank the Examiner for the courtesies extended during the telephonic interview of August 13, 2004. The amendments contained herein are consistent with what was discussed during the Examiner Interview. Reconsideration and allowance of the above-identified application are respectfully requested.

Claims 1-3, 5-20, 22-28 and 30-35 are pending in the application, wherein claims 1, 3, 7 and 30-34 have been amended and claim 4 has been canceled.

#### **I. STATUS OF CLAIMS**

The Office Action indicates that claims 8-16 and 35 are allowable and that dependent claim 4 would be allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims. Accordingly, independent claim 1 has been amended to incorporate the limitations of claim 4. As a result, claim 1 and each of the claims that depend from claim 1 are currently allowable, as discussed during the Examiner Interview. More specifically, claims 1-3, 5-6, 17-20 and 22-28 are currently allowable as the result of the amendment to claim 1. While method claims 17-20 and 22-28 were previously withdrawn from consideration, they are suitable for rejoinder since they merely claim a method of using the catalyst of amended claim 1, which has been deemed to be allowable over the prior art of record.

Claim 7 was also amended to include the limitations recited in claim 4. Because originally filed claim 4 was deemed to be allowable over the prior art of record in the first Office Action, and because original independent claim 7 was narrower than original independent claim 1, it necessarily follows that claim 7, as now amended, is patentable over the prior art of record.

Claim 32 was similarly amended to include the limitations recited in dependent claim 4. Accordingly, Applicants believe that claim 32 is likewise patentable over the prior art of record.

In view of the foregoing, the only claims in which patentability over the prior art of record appears to still be an issue are claims 30, 31, 33 and 34, the patentability of which will be discussed in the next section.

#### **II. PATENTABILITY OF CLAIMS 30, 31, 33 and 34**

Claims 30-31 and 33-34 have been amended in a manner that is believed to put them in condition for allowance. Claim 33 has been amended to change the transition phrase between

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the preamble and body from "comprising" to "consisting essentially of". As a result of this change, the claimed catalyst "consist[s] essentially of" one or more of the adsorption function metal oxide components recited in paragraph 1 of claim 33, and at least one of the oxidation function metal oxide components recited in paragraph 2 of claim 33. Since barium is not listed in paragraphs 1 or 2 of claim 33, the transition phrase "consisting essentially of" excludes the inclusion of barium in the amount required by U.S. Patent No. 4,110,258 to Lauder, which requires about 50% barium within the claimed catalyst.

According to Lauder, "[t]he catalytic compounds of this invention are metal oxides of the general empirical formula  $ABO_3$  and having a perovskite crystal structure, containing substantially equal numbers of cations of two types of metals, occupying the Type A cation sites and the Type B cation sites. In these compounds, barium is substantially the only metal in the A cation sites and there are at least two different metals in the B cation sites". Col. 2, lines 58-65 (emphasis added). The formula " $ABO_3$ " necessarily means that each crystal molecule includes a single Type A cation and a single Type B cation. That means that the number of Type A cations in the crystal exactly equals the number of Type B cations. Because "barium is substantially the only metal in the A cation sites" it follows that barium constitutes roughly 50% of all the metal cations within the catalyst disclosed in Lauder. Requiring 50% barium means that barium is the most prominent metal cation within the Lauder catalyst. In contrast, claim 33 defines a catalyst "consisting essentially of" the metal oxides recited in paragraphs 1 and 2. Because paragraphs 1 and 2 do not specifically recite barium, and because claim 33 includes the connector "consisting essentially of", it follows that the catalyst recited in 33 may not include barium as the most prominent metal within the catalyst as required by Lauder. In view of this, Applicants submit that claim 33 is neither anticipated by nor obvious over Lauder.

Claims 30-31 and 34 were alternatively amended to define a catalyst that is "characterized as promoting the catalytic oxidation, but not reduction, of nitrogen oxides (NO<sub>x</sub>) contained in fuel combustion gases". Support for this limitation is found in Table 1 at page 13 of the Application and Table 2 at pages 15 and 16 of the application, both of which demonstrate the propensity of the disclosed exemplary catalyst to oxidize NO to NO<sub>2</sub>. In contrast to catalysts that are characterized as promoting the oxidation of NO<sub>x</sub>, Lauder discloses a catalyst that promotes the opposite reaction, i.e., the reduction of NO<sub>x</sub> to nitrogen gas. According to Lauder,

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The metal oxides of the present invention are stable and durable at high temperature and have been shown to catalyze the oxidation of hydrocarbons and carbon monoxide and also the reaction between nitrogen oxide (NOx) and carbon monoxide to give nitrogen and carbon dioxide.

Col. 8, lines 38-47 (emphasis added).

The foregoing statement is consistent with similar teachings at col. 3, lines 66 – col. 4, line 10, as well as the Background section at col. 1, lines 11-17, and col. 2, lines 4-9. Whereas the Office Action is correct that the catalyst disclosed in Lauder promotes both oxidation and reduction reactions (*see Abstract*), it is clear from the remaining patent that the oxidation reactions described in Lauder involve oxidizing carbon monoxide and other carbon-containing substances to carbon dioxide. The only reaction involving NOx is described as the reduction of nitrogen oxides to nitrogen gas. Lauder neither teaches nor suggests a catalyst that preferentially promotes the oxidation of NOx to higher nitrogen oxides. If the Lauder catalyst were capable of oxidizing nitrogen oxides to higher oxides than nitrogen, one of skill in the art would have expected Lauder to discuss this trait. Instead, Lauder consistently describes the catalyst in terms of oxidizing carbon monoxide and reducing nitrogen oxides to nitrogen gas. In view of this, Applicants submit that the Lauder catalyst is inherently characterized as promoting the reduction of NOx to nitrogen rather than oxidizing NOx to higher nitrogen oxides. In view of this, Applicants submit that claims 30-31 and 34 are neither anticipated by nor obvious over Lauder.

According to MPEP 2141.02, when determining whether a claim is patentable over the prior art, the question is whether the invention as a whole would have been obvious. This section further states that “in delineating the invention as a whole, we look not only to the subject matter which is literally recited in the claim in question . . . but also to those properties of the subject matter which are inherent in the subject matter and are disclosed in the specification” (emphasis added). Therefore, the properties of a claimed composition, even if not recited in the claim, are germane to the issue of whether or not the claimed invention is disclosed in the prior art. Because the catalyst recited in claims 30-31 and 34 specifically recite the property of promoting the reduction but not the oxidation, of NOx, this property must be given patentable weight when comparing these claims with Lauder according to MPEP § 2141.02. In contrast to this property of the catalyst recited in claims 30, 31 and 34, Lauder teaches that the catalyst disclosed therein does just the opposite, i.e., it promotes the reduction, rather than the oxidation,

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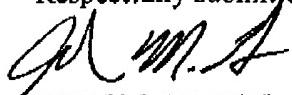
of NOx to nitrogen gas. This is further evidence that claims 30, 31 and 34 are patentable and nonobvious over Lauder.

### III. CONCLUSION

In view of the foregoing, Applicants submit that the claims are in allowable form and that the present amendment is suitable for entry after final rejection under Rule 116. In the event that the Examiner finds remaining impediment to a prompt allowance of this application that may be clarified through a telephone interview, or which can be overcome by examiner amendment, the Examiner is requested to contact the undersigned attorney.

Dated this 16 day of August 2004.

Respectfully submitted,



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